Feasibility of Digitizing LEI Evaluations with an Internationalized ASSISTments

Bryce Kaw-uh

The Latino Education Institute (LEI)

The Purpose
—

Aims to "improve the academic achievement and well-being of Latino students (grades K-16) and their families" ("About LEI")

The Impact
—

Runs 19 community programs that serve 16 schools and 2,800+ families

The Challenge
—

Needs a multilingual online platform to streamline its student evaluation process

Barriers to an Equal Education

- The Latino achievement gap is the product of an education debt

- Contributing factors:
  - Systemic discrimination
  - Poverty
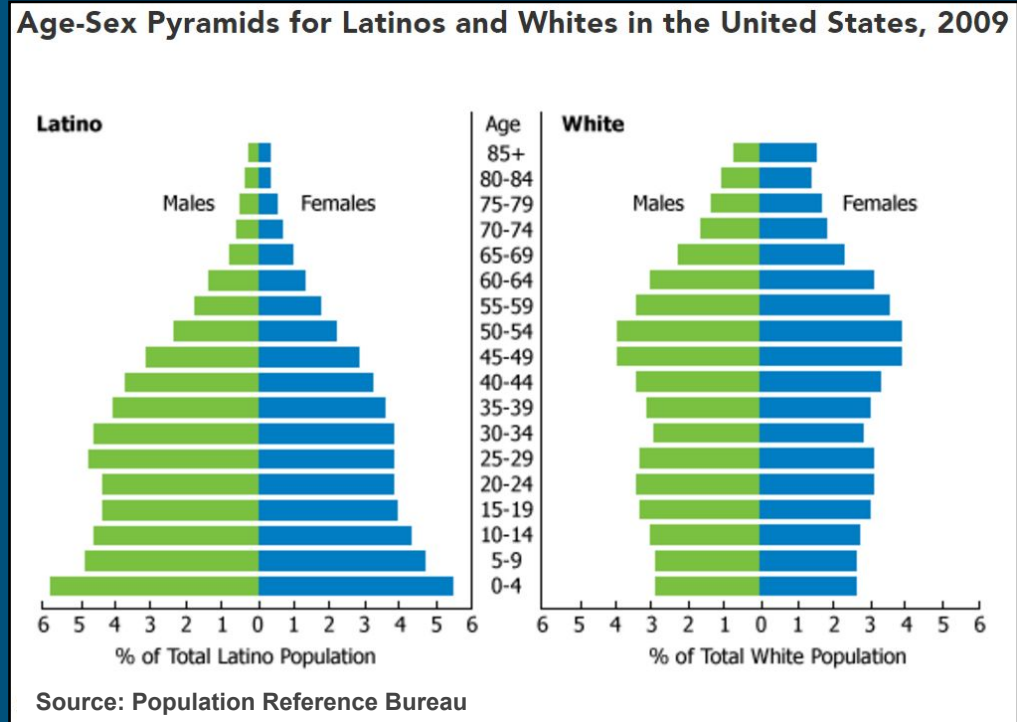 - Language differences
  - Lower school funding

Figure 3.
Percentage of the Population 25 Years and Older With a Bachelor's Degree or Higher by Race and Hispanic Origin: 1988 to 2015
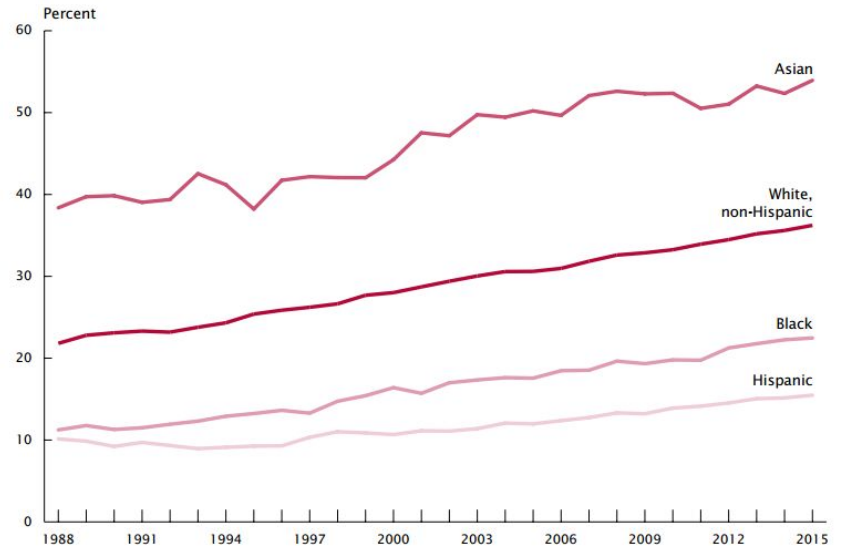
Source: U.S. Census Bureau, 1988–2015 Current Population Survey.

Closing the Gap: Important yet Complex

- 24.3% of children attending elementary and high school self-identified as Latino in 2015

- Latinos are not a monolith:
  - Mexican: 63.4%
  - Puerto Rican: 9.5%
  - Salvadoran: 3.8%
  - Cuban: 3.7%
  - Dominican: 3.3%
  - Guatemalan: 2.4%

Age-Sex Pyramids for Latinos and Whites in the United States, 2009

Latino — Males / Females

White — Males / Females

Age: 85+, 80-84, 75-79, 70-74, 65-69, 60-64, 55-59, 50-54, 45-49, 40-44, 35-39, 30-34, 25-29, 20-24, 15-19, 10-14, 5-9, 0-4

% of Total Latino Population

% of Total White Population

Source: Population Reference Bureau

41%

of Worcester Public Schools students self-identified as Latino in 2016

WPS High School Graduation Rates

Asian

84.8%

White

78.2%

Black

76.5%

Latino

67.4%

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Latino Education Institute

ASSISTments

The Purpose

—

Aims to, "in classrooms everywhere, continuously improve teaching and learning through the use of validated educational research findings and applied technology" ("ASSISTments Mission and Vision")

The Impact

—

Helps more than 600 teachers create online quizzes and assignments

Used in 42 states and 14 countries

The Challenge

—

Needs internationalization in order to expand its global presence

Internationalization

- Definition:

  "The process of planning and implementing products and services so that they can easily be adapted to specific local languages and cultures, a process called localization" ("What is internationalization (I18N)?").

Hello!

¡Hola!
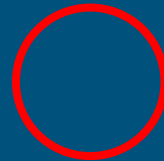
Two Challenges, One Solution?

LEI

A non-profit educational organization that needs a multilingual online platform to streamline its student evaluation process

ASSISTments

An online educational platform that needs internationalization in order to expand its global presence

Digitizing LEI Evaluations with an Internationalized ASSISTments

Goal

Address both issues at once by internationalizing ASSISTments and determining whether it was the optimal service for digitizing LEI's evaluations

Methodology

Determining Requirements

Software Changes

Alternative Platform Reviews

Informal Walkthroughs

Student Pilot Programs

Final Deliverables

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Determining Requirements

- Collected from in-person interviews and email correspondence with LEI Assistant Director Hilda Ramirez

System Requirements	
✓	Free Institutional Usage
✓	Free Technical Support
✓	Multilingual Capabilities
✓	Custom Content Creation
✓	Shareable Content
✓	Long-Term Storage
✓	Pre-Processed Data
✓	Exportable Data
✓	Multiplatform Support

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Software Changes: String Translation

	English	Spanish	Arabic	Renah's Arabic Edit	French
5	**English**	**Spanish**	**Arabic**	**Renah's Arabic Edit**	**French**
6	Answer recorded. Click "Next Problem"	Respuesta registrada. Haga clic en "Siguiente Problema"	تم تسجيل الجواب، انقر (المسألة التالية)		Réponse enregistrée, cliquez sur "Problème suivant"
7	Sorry, try again	Lo sentimos, intente de nuevo	اسف، المرجع المحاولة مجددا	اسف، حاول مرة أخرى	Désolé, veuillez réessayer
8	is not correct	no es correcto	ليس صائبا	غير صحيح	n'est pas correcte
9	Your response	Su respuesta	جوابك		Votre réponse
10	Canceling...	Cancelando...	الغاء		Annuler...
11	Done!	¡Terminado!	تم	تم!	Terminé...
12	Downloading...	Descargando...	**تنزيل**	تنزيل...	Téléchargement...
13	Loading...	Cargando...	جار التحميل	جار التحميل...	Chargement...
14	Uploading your progress...	Subiendo su progreso...	تحميل التقدم المحرز	تحميل التقدم...	Téléchargement de votre progrès...
15	Uploading...	Subiendo...	تحميل	تحميل...	Téléchargement...
16	Working...	Trabajando...	يعمل	يعمل....	Travaillant...
17	Removing old assignment...	Borrando su tarea anterior...	شطب الواجبات القديمة	شطب الواجبات القديمة...	Supprimer l'ancien devoir...
18	Clearing assignments from your browser	Borrando asignaciones de su navegador	مسح الواجبات من المتصفح	مسح الواجبات من المتصفح	Effacer les devoirs de votre navigateur
19	You must enter an answer.	Debe escribir una respuesta.	ادخال الجواب اجباري	يجب إدخال إجابة...	Il faut entrer une réponse.
20	Sorry, your response was incorrect.	Lo sentimos, su respuesta fue incorrecta.	اسف، جوابك غير صحيح	اسف، جوابك غير صحيح...	Désolé, votre réponse n'est pas correcte
21					
22	Type your answer below:	Escriba su respuesta a continuación:	اكتب اجابتك اسفله	اكتب اجابتك تحت:	Tapez votre réponse ci-dessous
23	The problem expects a numeric answer (ex: 3.1, 5, 2/3 or 1 2/3).	El problema espera una respuesta numérica (como 3.1, 5, 2/3 o 1 2/3).	المسألة تتطلب اجابة رقمية (مثال: 3 ، 1، 5 ،2/3 او 1 2/3)	المسألة تتطلب اجابة رقمية (مثال: 3,1 او ٥ او 2/3 او 1 2/3)	Le pôlème s'attend à une réponse numérique (par exemple : 3,1,5,2/3 ou 1 2/3)
24	The answer "{0}" is not a valid answer. It must be changed.	La respuesta "{0}" no es una respuesta válida. Debe ser cambiado.	"{0}" ليس بالإجابة الصحيحة. يجب تغييرها.	الجواب "{0}" غير صالح. يجب تغييره	La réponse "{0}" n'est pas une réponse valide. Elle doit être changée.
25	The problem expects a numeric expression for an answer (ex: 3 - 2*4, or 2/3).	El problema espera una expresión numérica como respuesta (como 3 - 2*4, o 2/3).	المسألة تتطلب تعبيرا رقميا كإجابة (مثال: 3 - 2 * 4 او 2/3).		Le problème attend une expression numérique pour une réponse (ex: 3 - 2 * 4 ou 2/3).
26	Uh oh, parentheses in your answer are not matching in pairs.	Uh oh, los paréntesis en su respuesta no coinciden en parejas.	أ، أوه، الأقواس في إجابتك ليست متطابقة كأزواج.	الأقواس في إجابتك ليست متطابقة كأزواج.	Uh oh, les parenthèses de votre réponse ne correspondent pas par paires.

Software Changes: Outcome

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Alternative Platform Review

- Key:
  - 0 = No Fulfillment
  - 1 = Partial Fulfillment
  - 2 = Total Fulfillment

Requirement	Web Service					
	ASSISTments	Blackboard	Canvas	Google Forms	Moodle	Qualtrics
Free Institutional Usage	2	0	0	2	2	0
Free Technical Support	2	2	2	2	2	2
Multilingual Capabilities	1	2	2	1	2	2
Custom Content Creation	2	2	2	2	2	2
Shareable Content	2	2	2	2	1	2
Long-Term Storage	2	2	2	2	2	2
Pre-Processed Data	1	2	1	2	1	2
Exportable Data	2	2	2	2	2	2
Multiplatform Support	2	2	2	2	2	2
Total	16	16	15	17	16	16

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Exportable Data	2	2	2	2	2	2
Multiplatform Support	2	2	2	2	2	2
Total	**16**	**16**	**15**	**17**	**16**	**16**

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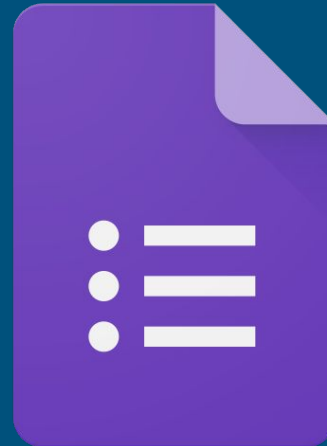Student Pilot Programs

Final Deliverables

Informal Walkthroughs

- Conducted with LEI Assistant Director Hilda Ramirez

ASSISTments on March 27th

Google Forms Next Week

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LEI Student Pilot Programs

Group 1: March 28

Who: 8 female LEI high school students

What: Completed a model LEI evaluation on ASSISTments and discussed the experience

Where: Computer Lab at WSU

Why: Learn what LEI students think of ASSISTments when used in practice

Group 2: April 25

Who: 1 male and 6 female LEI high school students

What: Completed a model LEI evaluation on both ASSISTments and Google Forms and discussed the experience

Where: Computer Lab at a WSU

Why: Gain a different perspective than Group 1 and learn which platform LEI students prefer

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Next Steps

Second Student Pilot Program

Staff Training Resources for LEI

Internationalization Tutorial Video

Recommendations for ASSISTments

Next Steps

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Next Steps

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Recommendations for ASSISTments

Improved Assignment Report

Download Report to: Spreadsheet

PRABC5Y4		PRABC5Y5	
		100%	
0	D	1	Yes / SÃ-

Additional Languages

国语 Deutsch Italiano Português 日本語 Русский язык

Further Internationalization

- Numbers   1,000.50   1.000,50

- Time of day   1:45 PM   1345

- Date   05-10-16   10-05-16

- Symbols
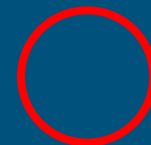
Acknowledgements

Thank You

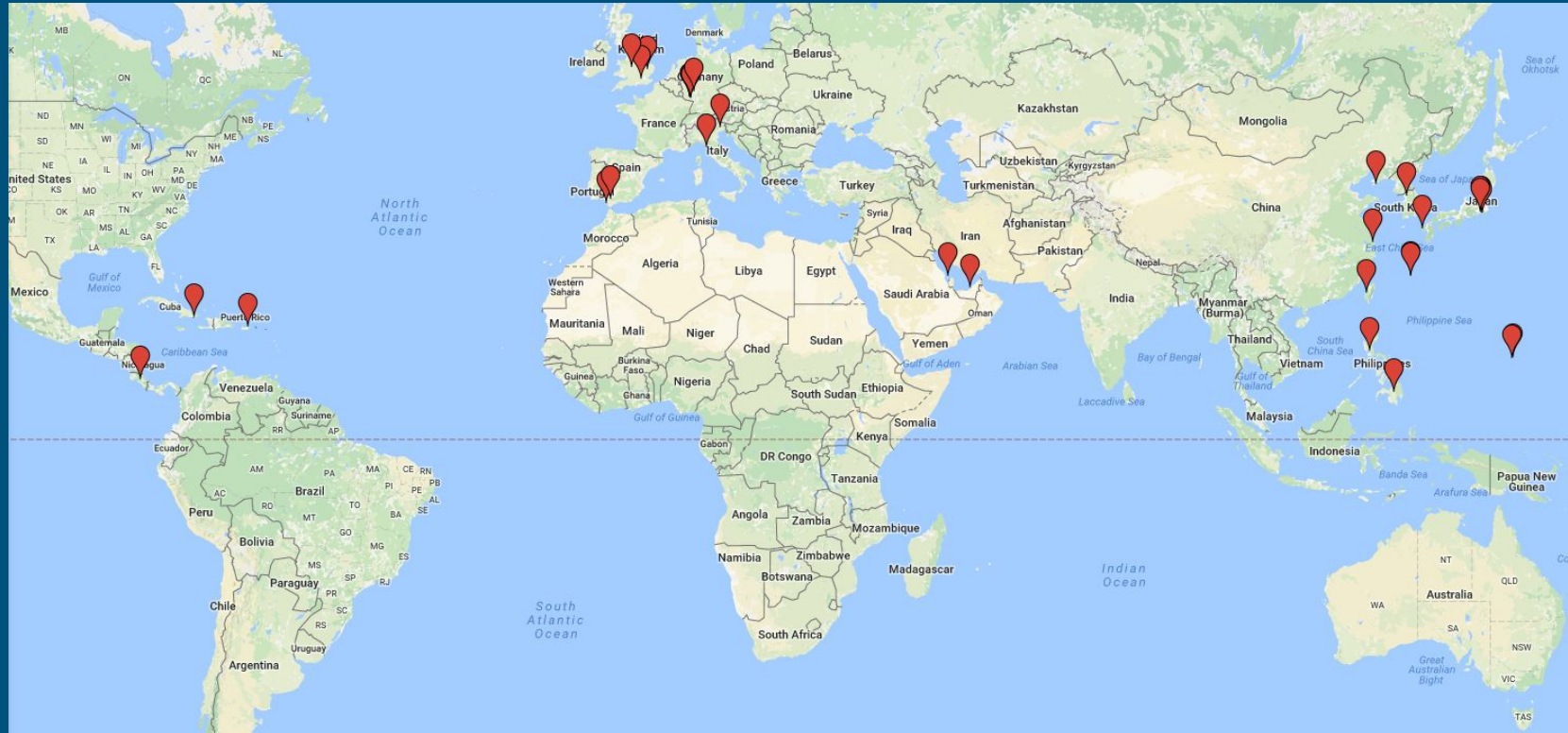# Any Questions?

Map of U.S. Schools Using ASSISTments

Map of Global Schools Using ASSISTments

Further Internationalization

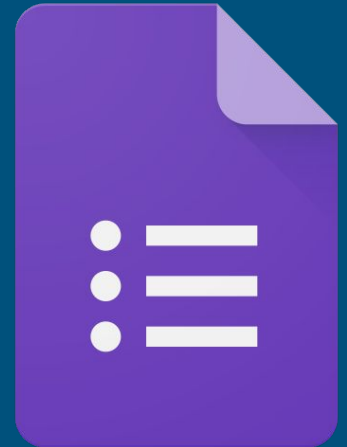- The specific localization depends on the target audience

User Audience	Language	Symbols	Dates	Numbers
U.S. Latino	✓			
French	✓		✓	✓
Japanese	✓	✓	✓	✓

Internationalization of Google Forms

- Created and maintained by Google
- Language depends on browser setting
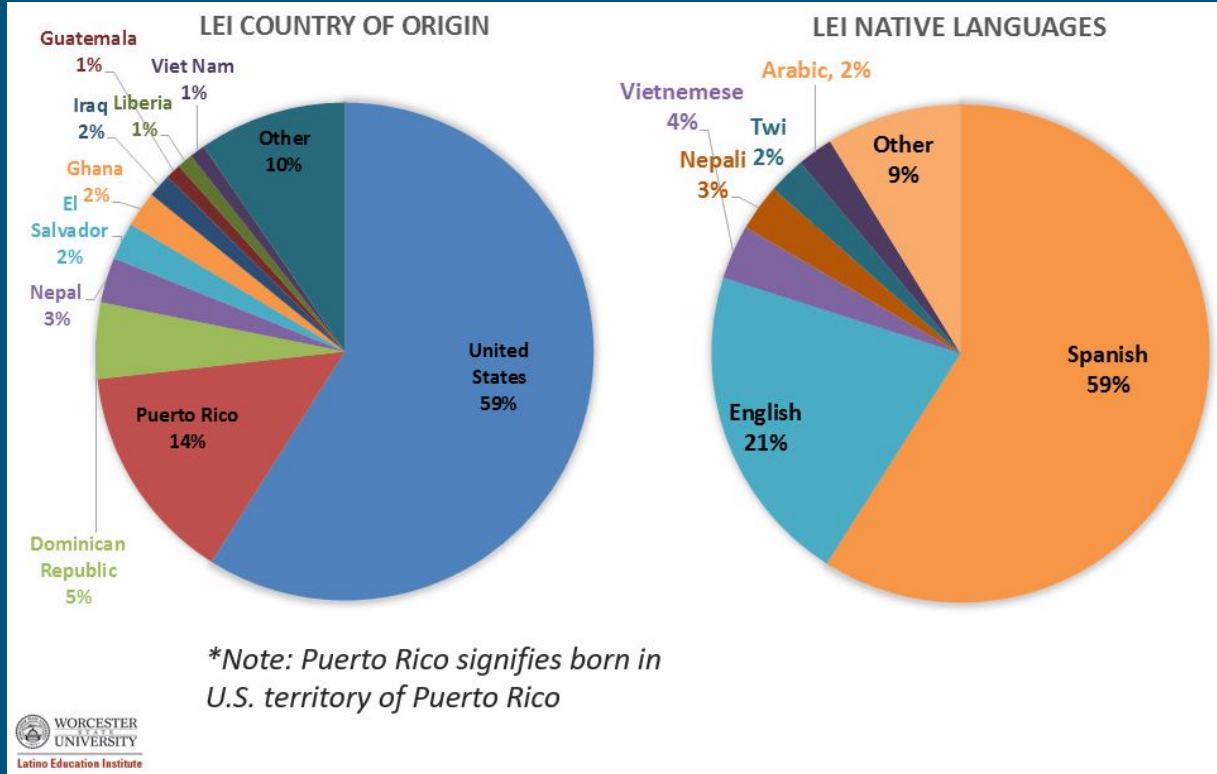- Unknown internationalization of symbols

Ni de aquí ni de allá

- The world is increasingly interconnected
- We have the global here in the U.S., and in Worcester
  - "Salad bowl society"
- The Latino achievement gap has transnational origins
  - Socio-political context is necessary for an appropriate response

LEI Youth Demographics

LEI COUNTRY OF ORIGIN

- Guatemala 1%
- Viet Nam 1%
- Iraq 2%
- Liberia 1%
- Ghana 2%
- El Salvador 2%
- Nepal 3%
- Other 10%
- United States 59%
- Puerto Rico 14%
- Dominican Republic 5%

LEI NATIVE LANGUAGES

- Arabic, 2%
- Vietnemese 4%
- Twi 2%
- Nepali 3%
- Other 9%
- Spanish 59%
- English 21%

Note: Puerto Rico signifies born in U.S. territory of Puerto Rico

WORCESTER STATE UNIVERSITY
Latino Education Institute

Why Not Qualtrics?

- LASOS will be receiving access to Qualtrics through WPI faculty
- If faculty contacts disappear, access to Qualtrics disappears
- Long-term data storage is important for LEI

Software Changes: File Internationalization


```
StudentTutorMessages_es.properties    StudentTutorMessages.properties ⊠
  1 # This is the default StudentTutorConstants properties file. It contains English translations.
  2
  3 # INTERNATIONALIZATION FOR WebApp/gwt/student
  4
  5 # CommentDialog.java
  6 view_sendComment = Send Comment
  7 view_typeComment = Type your comment here
  8 view_cancel = Cancel
  9
 10 # ProgressPanelView.java
 11 view_problemID = Problem ID:
 12 view_moreToCome = More to come...
 13 view_loadingProblem = Loading problem...
 14
 15 # StudentResponsesView.java
 16 view_myResponses = My responses:
 17
 18 # VerticalMultiContentView.java
 19 view_assignment = Assignment:
 20
 21 # TutorContentFeedbackCategoryStrings.java
 22 domain_questionGeneral = General Comment
 23 domain_questionDifficult = I am having difficulty with this problem
 24 domain_questionLiked = I liked this question
 25 domain_questionLearned = I learned something from this question
 26 domain_questionMath = Math error in this question
```

Software Changes: File Internationalization

Software Changes: File Internationalization


```
   X  ApplicationView.ui.xml      J  AppController.java  ⋈

586
587          default:
588            throw new IllegalStateException("Unexpected assignment done state: " + finishedState.getDisplayName());
589          }
590
591          presenter.hideTutor();
592
593          // dm: AS-1009
594          // Let's use the same message seen when not in Test Drive.
595          // And add to it the "You are finished previewing this content."
596          if(acs.isPreviewMode())
597          {
598            completedMsg = completedMsg + "<br/><br/> " + StudentTutorMessages.STM.tutor_finishedPreviewing();
599
600            completedMsgBox = mbProvider.getMessageBoxWithButton(StudentTutorMessages.STM.tutor_finished() + " " + title, completedMsg);
601
602            completedMsgBox.setModal(false);
603            completedMsgBox.setGlassEnabled(true);
604            completedMsgBox.center();
605
606            return;
607          }
```

Software Changes: File Internationalization


```
ApplicationView.ui.xml ⊠

160
161⊖                          <g:layer top="2px" height="32px" left="10px" width="145px">
162⊖                            <g:HTMLPanel>
163                              <g:Image resource='{res.logoAssistmentsSmall}'/>
164                            </g:HTMLPanel>
165                          </g:layer>
166
167⊖                          <g:layer>
168                            <g:HorizontalPanel ui:field="headerTabs"></g:HorizontalPanel>
169                          </g:layer>
170
171⊖                          <g:layer top="13px" height="30px" right="35px" width="30%">
172⊖                            <g:HTMLPanel ui:field="accountInfo">
173⊖                              <a href="/account/logout" id="logoutLink" onclick="return confirm('Are you sure?');">
174                                <ui:msg key="impl_logout">Logout</ui:msg>
175                              </a>
176                              <div id="accountName"></div>
177⊖                              <a href="/account" id="accountLink">
178                                <ui:msg key="view_account">Account</ui:msg>
179                              </a>
180
181                            </g:HTMLPanel>
182                          </g:layer>
```

Software Changes: File Internationalization

Software Changes: Language Preference

Software Changes: Language Preference

/assistments/student/index.html?assignmentID=AS1797092&locale=es&reportUrl=/tutor/report/item_level/43752?assignment_id=1797092#

/assistments/student/index.html?assignmentID=AS1797092&locale=en&reportUrl=/tutor/report/item_level/43752?assignment_id=1797092#

References

- The Latino Education Institute (LEI):
  - http://www.worcester.edu/LEI-About/
  - http://www.worcester.edu/LEI-Comparative-Impact/
  - https://www.worcester.edu/uploadedFiles/Website_Assets/Documents/LEI/LEI-a%20year%20in%20review%20booklet%202015-16.pdf
- An Unpaid Debt:
  - https://www.census.gov/content/dam/Census/library/publications/2016/demo/p20-578.pdf
  - http://www.prb.org/Publications/Reports/2010/latinosupdate1.aspx
- 41%:
  - http://profiles.doe.mass.edu/profiles/student.aspx?orgcode=03480000&orgtypecode=5
- WPS High School Graduation Rates:
  - http://www.worcester.edu/LEI-Research-and-Publications/
- ASSISTments:
  - http://www.aboutus.assistments.org/mission-and-vision.php
- Internationalization:
  - http://whatis.techtarget.com/definition/internationalization-I18N
- Map of U.S. Schools Using ASSISTments:
  - https://www.google.com/maps/d/viewer?mid=1xTAh0ByRLgTkTRJNh0dTdfesIVs
- Map of Global Schools Using ASSISTments:
  - https://www.google.com/maps/d/viewer?mid=1GmZ4xgutx-dG1IW8iU3JxJUXBtw